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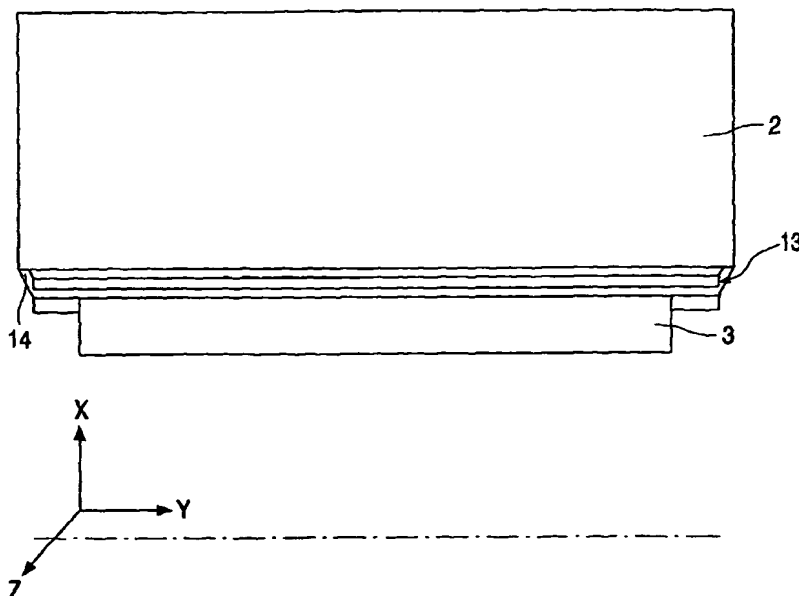
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(54) Title: **ACTIVELY SHIELDED GRADIENT COIL SYSTEM COMPRISING ADDITIONAL EDDY CURRENT SHIELD SYSTEM**



(57) Abstract: The present invention relates to a magnetic resonance imaging (MRI) system. The basic components of a MRI system are the main magnet system, the gradient system, the RF system and the signal processing system. The gradient system comprises normally three orthogonal primary coils and three orthogonal shield coils. The shield coils of the gradient system are usually designed to minimize the generation of eddy currents within the main magnet system. However, such a gradient system designed to minimize the generation of eddy currents is not optimal with respect to mechanical vibrations inside the gradient system. It is also possible to design the shield coils of the gradient system in a way to minimize mechanical vibrations inside the gradient system. However, such a gradient system is not optimal with

respect to the minimization of eddy currents. The present invention provides a magnetic resonance imaging system, comprising at least: a main magnet system; a gradient system, said gradient system comprising primary coil-like elements and shield coil-like elements, said shield coil-like elements being designed to provide Lorentz force compensation for the primary coil-like elements thereby minimizing, preferably eliminating, mechanical vibrations inside the gradient system; and an eddy current shield system positioned between said main magnet system and said gradient system, said eddy current shield system being mechanically decoupled from the main magnet system and/or the gradient system.

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